LEGO Technic Mounting for Arduino & Battery Pack Boards

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PARTS:

- Arduino Mounting board (1)
- Technic Beams: 15M (4)
- Technic Beams: 11M (4)
- Battery Mounting board (1)
- 2M Friction Snap with Cross Hole (6)
- Connector Pin with Ridges (8)
- Connector Peg with Cross Axle (8)

SUMMARY

Supplemental adapting is the goal for this project.

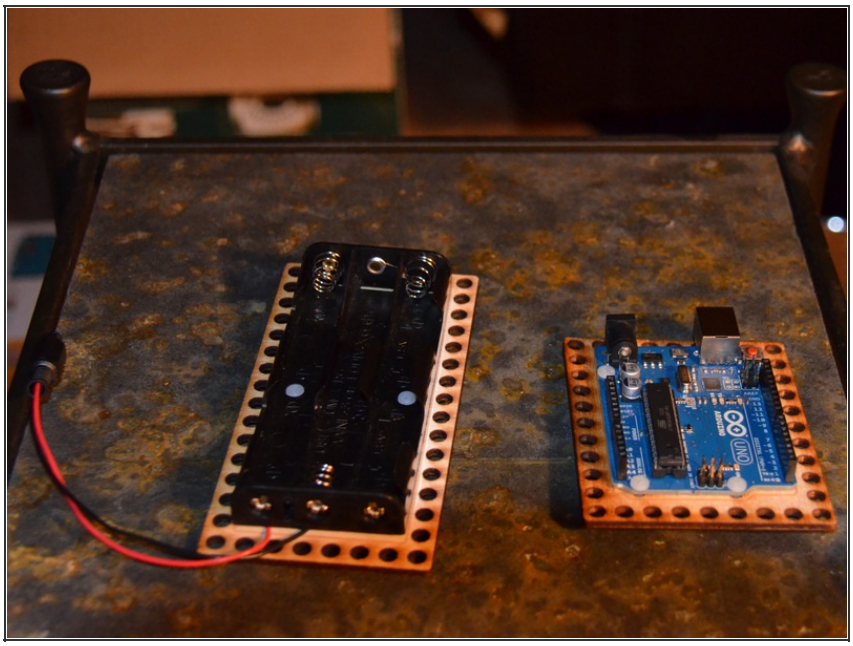
If you have ever taken a new adaptor board and tried to use it without thinking through its integration into a project you will know well that it is often only a first step.

The guide that follows is a method for taking an extant adaptor board and taking *step two;* i.e., adapting the board to the design principles and function making it clean and functional.

Though this design is specific to the boards that I link to in the parts section of the guide you

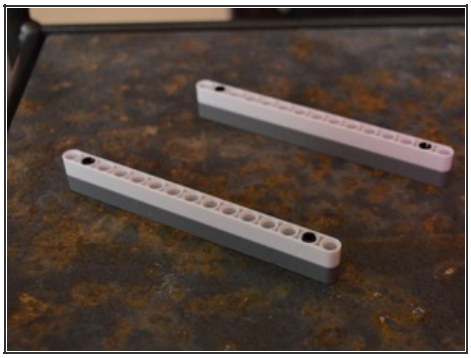
can still glean some basic ideas from the guide such as offsetting to allow for space, pin placement techniques, and simplicity in design — these are universal to a good construction.

Step 1 — LEGO Technic Mounting for Arduino & Battery Pack Boards



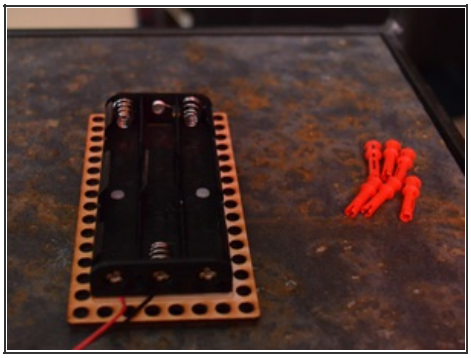
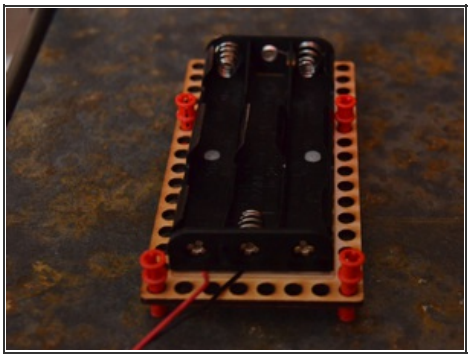
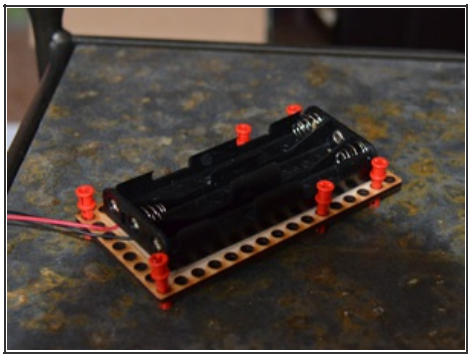
- Attach Arduino and battery holder to the mounting boards.
- Since I assume you already have these pieces I will leave it up to you to figure out the necessary screw and nut size.
- **Note**: There is no need to cut down the screws. The design you are building will accommodate their length.

Step 2



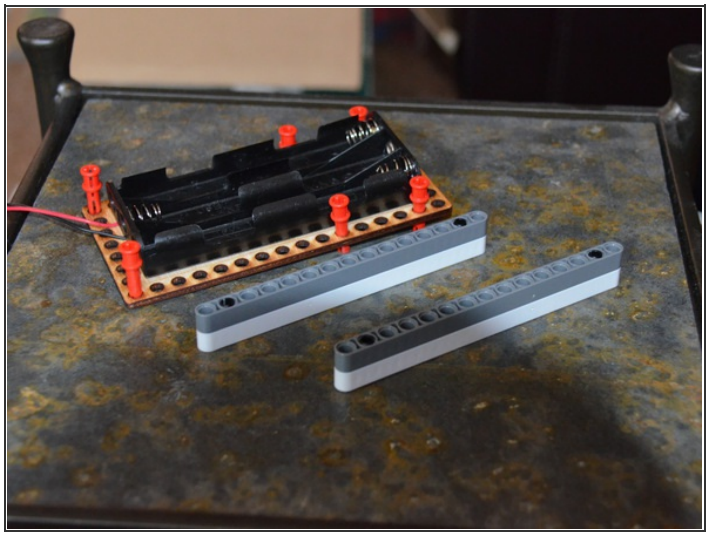
- Take **two 15M beams** and connect them with **two Connector Pins with Ridges** (a.k.a friction pins).
- **Offset** the pins' placement one hole from the end of the beam on either side.
- **Repeat** this step so that you have two of these beams.

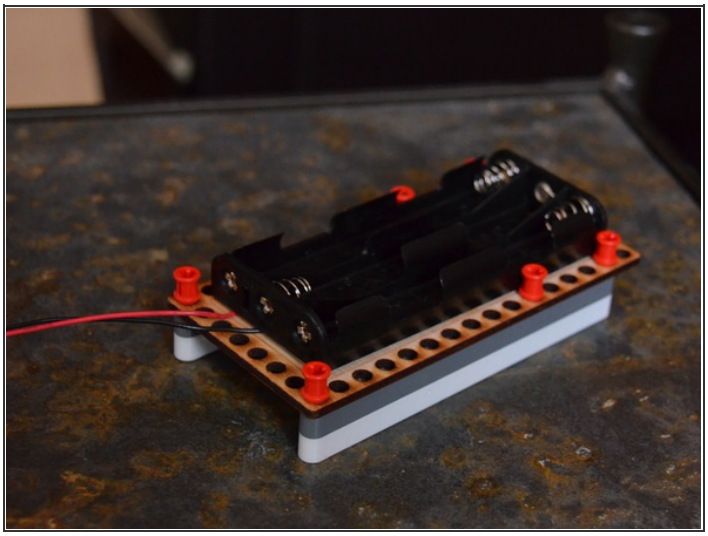
Step 3

- Gather the **Battery Mounting Board** and **six** of the **Friction Snap with Cross Hole**.
- **Orient** your mounting board so that the short side is facing you.
- Drop the pins into the **two** corners closest to you — one in each hole.
- Count up the long side of the board **nine** holes and drop in another pin. Make sure there are nine holes **between** the pin in the corner and the pin you just dropped in.
- Count **three** more holes and drop a pin in. Note this pin is one hole from the corner.

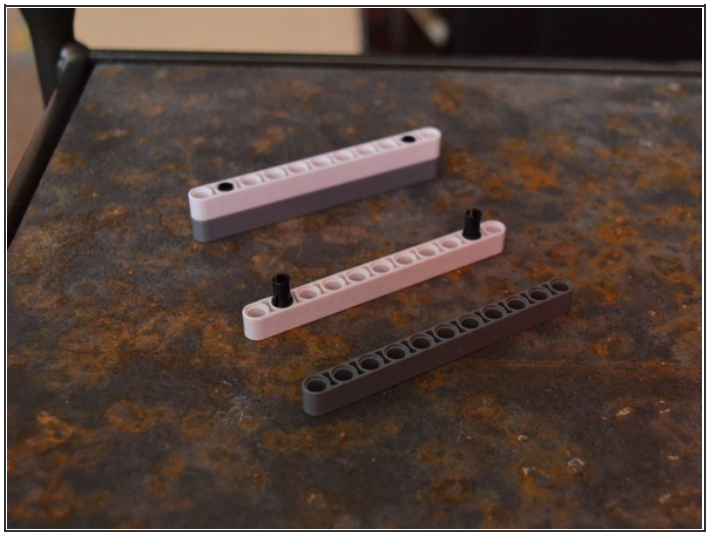
Step 4





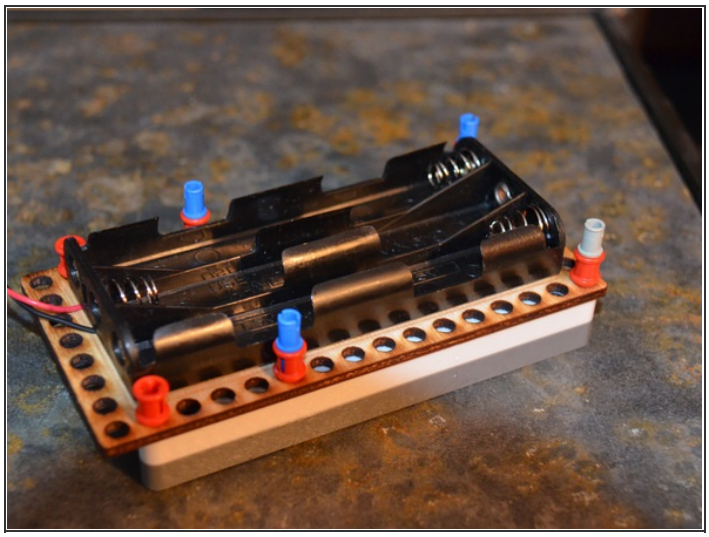
- Take the **beams** you made in **Step One** and the pins that you have placed through the holes in the Battery Mounting Board from Step Two and connect.
- Your Battery Mounting Board is now secure between the pins' female adaptors and the beams.
- Make sure you connect the beams so that each of the end holes has a pin running through it.

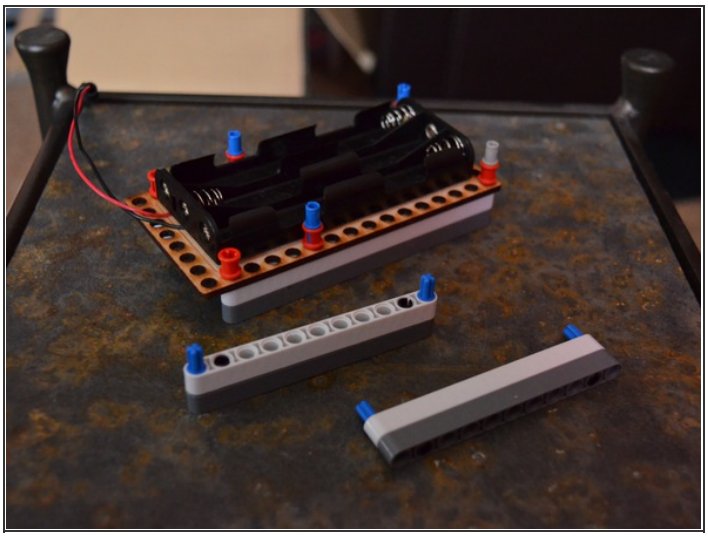
Step 5



- Grab **two 11M beams** and **two friction pins**.
- Connect the two beams together using the **second hole** from the end of the beam.
- Repeat this step.

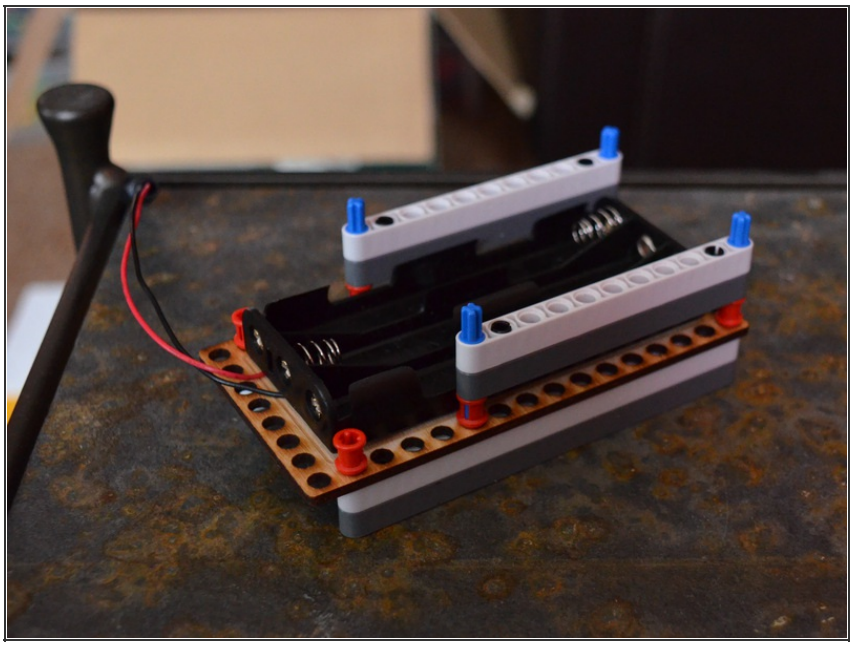
Step 6





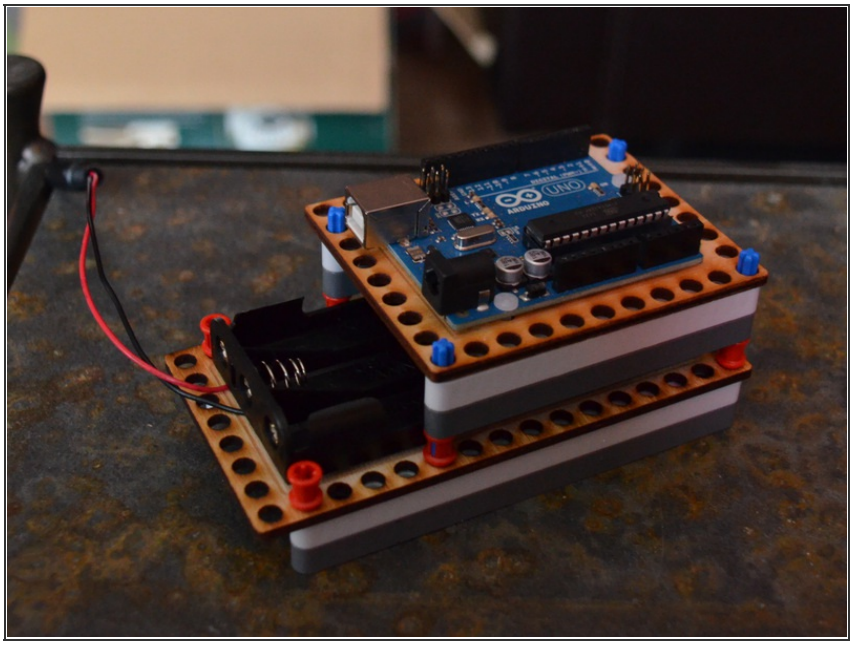
- Round up **eight pins with cross axles**.
- **Four of the pins** will attach via the cross axle side in to the **female pins that protrude on the battery mounting board**.
- **The other four** pins will attach to the two beams just built **at the end holes** and with cross axles up.

Step 7



- Attach the pins protruding from the battery mounting board to the two 11M beams.
- Make sure the cross axle pins on the 11M beams are at the top of the structure.

Step 8



- Finally, take your Arduino mounting board and slip it onto the beams and pins on the Battery Mounting Board.
- You could just rest the Arduino board on these pins, but since you used cross axle pins you might as well use a full or half bushing to lock down your Arduino.

The LEGO parts can all be found in the NXT 2.0 kit or you can even substitute your own similar parts. This guide is as much a design experiment as it is a rote for execution.

I have not included the optional parts necessary for securing the final level of the adaptor; however, any LEGO Technic bushing or half bushing will do — you will need four of them.

The mounting boards need to be built or bought.

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